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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/988,302	11/19/2001	Kyoung Hwan Chin	SEC.910	8429
20987	7590	10/20/2004	EXAMINER	
VOLENTINE FRANCOS, & WHITT PLLC ONE FREEDOM SQUARE 11951 FREEDOM DRIVE SUITE 1260 RESTON, VA 20190			PERRIN, JOSEPH L	
			ART UNIT	PAPER NUMBER
			1746	

DATE MAILED: 10/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

✓

Office Action Summary	Application No.	Applicant(s)	
	09/988,302	CHIN ET AL.	
	Examiner	Art Unit	
	Joseph L. Perrin, Ph.D.	1746	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 16 September 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 10-13 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5 and 10-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 19 November 2001 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input checked="" type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. <u>20041005</u> . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____. | 6) <input type="checkbox"/> Other: _____. |

DETAILED ACTION

Response to Amendment

1. Applicant's request for reconsideration of the finality of the rejection of the last Office action is persuasive and, therefore, the finality of that action is withdrawn.

Response to Arguments

2. Applicant's arguments, see Amendment under 37 CFR §1.116, filed 10 September 2004, with respect to the rejection(s) of claim(s) 1-5 & 10-13 under 35 USC §§102 & 103 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of AAPA and Schneider and/or Sakai.

Drawings

3. The drawings are objected to as failing to comply with 37 CFR 1.84(p)(4) because reference characters "32a" and "32b" have both been used to designate the nozzle in Figure 3. Moreover, in the same figure one nozzle is designated "32a" while the other is designated "32a,32b". This is confusing because it is unclear whether the nozzles all must be "32a" (*i.e.* Figure 4) or "32b" (*i.e.* Figure 5). Figure 3 suggests a mixture of different nozzles in which the specification does not provide support. In view of the original disclosure, it is believed applicant's intent is to disclose "32a" and "32b" as separate embodiments of types of nozzles, as shown in Figures 4 & 5. If this is applicant's intent, applicant is encouraged to designate each nozzle of Figure 3 as "32" in order to obviate any ambiguities. Similarly, chamber "30a,30b" is rejected for reasons

of same. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

4. The disclosure is objected to because of the following informalities: Throughout the specification, the nozzle recitation of "32a,32b" is confusing since such a recitation suggests both nozzles 32a & 32b are present notwithstanding the disclosure in Figures 4 & 5 showing embodiments of the nozzles in the alternate only (*i.e.* either a set of 32a or a set of 32b). Applicant is encouraged to clarify the separate embodiments in the specification in place of describing the nozzles in what appears to be a mixture of such nozzles, *i.e.* describe the different embodiments as the genus 32 in Figure 3 and the species 32a & 32b in Figures 4 & 5, respectively. Similarly, chamber recitations of "30a,30b" are confusing for reasons of same and need to be addressed.

Appropriate correction is required.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-3, 5 & 10-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art (hereinafter "AAPA") in view of Schneider (previously cited).

In Figures 1-2 of applicants' specification applicants teaches all the limitations of the pending claims, except that AAPA fails to teach at least three cleaning gas nozzles.

However, AAPA in Figure 2 does disclose a plurality of process gas nozzles disposed at regular intervals on a vertical sidewall of the chamber.

Schneider teaches that it is advantageous to provide a plurality of nozzles at regular intervals (see distributor 50 which includes a plurality of nozzles/orifices 115 at regular intervals, col. 5, line 12 *et seq.*) to provide a "uniform distribution".

Therefore, the position is taken that a person of ordinary skill in the art at the time the invention was made would have been motivated to modify the chamber of AAPA with a plurality of cleaning nozzles at disposed at regular intervals in order to improve the uniformity of applying cleaning fluid which would result in more uniform/efficient cleaning.

Moreover, the only difference between AAPA and the claimed invention is the number of nozzles even though Figure 2 clearly discloses AAPA as using a plurality of nozzles

18 disposed at regular intervals. The nozzles are not asserted to do anything different than they do in the prior art since the prior art does disclose using nozzles disposed at regular intervals. No evidence of unexpected results has been provided. It has been held that the mere duplication of parts has no patentable significance unless a new and unexpected result is produced. *In re Harza*, 274 F.2d 669, 124 USPQ 378 (CCPA 1960).

7. Claims 4 & 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over AAPA and Schneider, as cited above, and further in view of Sakai (previously cited). Recitation of AAPA and Schneider are repeated from Above. AAPA and Schneider fail to explicitly disclose that at least one nozzle is bent in a spiral form toward a center portion of the chamber and in a direction from a lower portion to an upper portion relative to an upper surface of the chuck. It is noted that the specification has been relied on to understand what is contextually meant by the term "spiral". Sakai discloses the missing element (amounts of carrier gas are introduced through the nozzles of the carrier gas pipes 10 into the reaction chamber 6 along its inner wall in the direction indicated by the arrows 18 of FIG. 2, ... while whirling the reaction gas and carrier gas together." See figure 2 and *inter alia* column 3, line 28 *et seq.*) Additionally, Sakai provides the explicit motivation for making the claimed combination. Namely, Sakai states at column 2, line 9 *et seq.*, that such a modification provides an apparatus of simple construction capable of producing a semiconductor element while providing uniform thickness, composition and dimensional precision (see col. 2, line 10 *et seq.*). The artisan would have been motivated at the time the invention was made to make the

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claimed combination for the reason explicitly set forth by Sakai, including better mixing and improved product resulting from improved gas distribution.

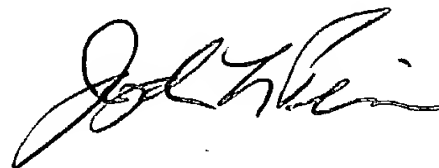
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph L. Perrin, Ph.D. whose telephone number is (571)272-1305. The examiner can normally be reached on M-F 7:00-4:30, except alternate Fridays.

9. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael E. Barr can be reached on (571)272-1414. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

10. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joseph L. Perrin, Ph.D.
Examiner
Art Unit 1746



jlP